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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/820,608	03/19/97	SUNAGA T	CU-1516RJS

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EXAMINER	
VANDERPUYE,K	
ART UNIT	**PAPER NUMBER**
2732	25

DATE MAILED: 01/18/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/829,608	SUNAGA
Examiner	**Group Art Unit**
K Vanderpuye	2732

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-17 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1, 4, 6 – 17 is/are rejected.

☒ Claim(s) 2, 3, 5 is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received: _____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

Office Action Summary

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 1, 4, 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art in view of Tanaka(5,636,243).

Claim 1 is rejected because the admitted prior art teaches a CDMA mobile communication system with a pilot channel that transmits a pilot signal in spread spectrum formation and traffic channel transmit units that respectively transmit data signals while the pilot signal is transmitted(Fig. 1 and Fig. 2). As shown in figure in Fig. 5 of the current application, in a CDMA network involving multiple base stations, a pilot signal transmitted by one base station, regardless of whether it is being transmitted intermittently or continuously, is transmitted in synchronism with pilot signals from other base stations. This is evidenced by the timing relationship i.e. offset time t between base stations(see Fig. 5). The timing offset makes it possible for the pilot signals from the different base stations to be easily distinguishable from each other. The pilot signal is used for demodulation of data signals on the receiver side.(this is inherently taught by the admitted prior art since one of the well known functions of a pilot signal is its use as a carrier

phase reference for coherent demodulation) What the admitted prior art does not teach is a pilot signal that is intermittently transmitted. Tanaka's invention deals with direct communications between mobile stations in which he discloses a method wherein a single base station transmits an intermittent control signal, in a predetermined control channel(TDMA slot once every 100 msec, Fig. 3), to terminals located within the service area. These terminals communicate with each other by transmitting control and response signals intermittently to establish synchronization therebetween(summary of the invention, also see Fig. 12). In this way less power is expended during the establishment of synchronization. It would have been obvious to one of ordinary skill in the art to incorporate this same concept in the admitted prior art i.e. intermittent transmission of a pilot signal by a CDMA transmitter for the purpose of reducing power consumption.

Claim 4 is rejected because the admitted prior art teaches a CDMA receiver(Fig. 2) comprising: a pilot channel receiver unit which demodulates pilot signals in spread spectrum formation by transmitters while digital signals are sent in respective traffic channels. As shown in figure in Fig. 5 of the current application, in a CDMA network involving multiple base stations, a pilot signal transmitted by one base station, regardless of whether it is being transmitted intermittently or continuously, is transmitted in synchronism with pilot signals from other base stations. This is evidenced by the timing relationship i.e. offset time t between base stations(see Fig. 5). The timing offset makes it possible for the pilot signals from the different base stations to be easily distinguishable from each other. The pilot signal is used for demodulation of data signals on a receiver side.(this is inherently taught by the admitted prior art since one of the well known

functions of a pilot signal is its use as a carrier phase reference for coherent demodulation). What the admitted prior art does not teach is the demodulation of intermittently transmitted pilot signal and the detection from the pilot signal a timing for a traffic channel demodulation. Tanaka discloses an intermittent receiving operation whereby the mobile terminal intermittently receives the control signal(Fig. 11). The reasons for combining Tanaka with the admitted prior art are obvious in light of the above rejection. The motivation being that the receiver will require the intermittent timing signal for the purpose of intermittently synchronize mobile unit in order to demodulate the traffic signal.

Claim 8 is rejected for the same reasons as claims 1 and 4 and in addition to the fact that it is well known in the art that a CDMA mobile communications system is made up of plural base stations and mobile units in order to maintain communication over a wide geographic area.(cells)

Claim 9 and 14 are rejected because the use of offsets is taught by the admitted prior art.

Claims 10-12, 15-17 are rejected because it is well known in the art that the offset time can be changed depending on the extent to which it is practicable for a base station to be distinguished itself from other base stations.

Claim 13 is rejected because the admitted prior art teaches a CDMA mobile communication method comprising steps of: transmitting pilot signals in spread spectrum formation, the demodulation of continuously transmitted pilot signals. As shown in figure in Fig. 5 of the current application, in a CDMA network involving multiple base stations, a pilot signal transmitted by one base station, regardless of whether it is being transmitted intermittently or

continuously, is transmitted in synchronism with pilot signals from other base stations. This is evidenced by the timing relationship i.e. offset time t between base stations(see Fig. 5). The timing offset makes it possible for the pilot signals from the different base stations to be easily distinguishable from each other. The pilot signal is used for demodulation of data signals on the receiver side.(this is inherently taught by the admitted prior art since one of the well known functions of a pilot signal is its use as a carrier phase reference for coherent demodulation) What the admitted prior art does not teach is a pilot signal that is intermittently transmitted/demodulated, or the detection form timing signals a timing for traffic channel demodulation. The obviousness reasons for combining the admitted prior art with Tanaka in rejecting claim 13 are similar to those of claims 1, 4, 8.

3. Claim 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Tunica as applied to claim 4 above, and further in view of Marchetto et al(5,414,734).

Claims 6 and 7 are rejected because Marchetto teaches a receiver circuitry that uses the pilot signal to demodulate data affected by fading and interference and compensates for the undesired effects.(see Fig 3@ 96, 100, 92 and 104 also see abstract). It would have been obvious to one of ordinary skill in the art to incorporate this circuitry in the admitted prior art for the purpose of enabling channel response estimates to be made. The motivation would be to compensate for multi-path interference.

Allowable Subject Matter

4. Claim 2, 3, 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth Vanderpuye whose telephone number is (703) 308-7828. The examiner can normally be reached on M-F from 6:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doug Olms, can be reached on (703) 305-4703 . The fax phone number for this Group is (703) 308-9051.

DOUGLAS W. OLMS
SUPERVISORY PATENT EXAMINER
GROUP 2700

Kenneth Vanderpuye

January 7, 1999